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PHOTOGRAPHIC INTELLIGENCE REPORT

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POSSIBLY DEPLOYED

PROBABLE LONG RANGE SAM LAUNCH SITES
AT SARY-SHAGAN MISSILE TEST CENTER, USSR

DECLASS REVIEW by NIMA/DOD

CIA/PIR -71010

DATE OCTOBER 1966

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IMAGERY ANALYSIS DIVISION

**POSSIBLY DEPLOYED
PROBABLE LONG RANGE SAM LAUNCH SITES
AT SARY-SHAGAN MISSILE TEST CENTER, USSR**

OCTOBER 1966

CENTRAL INTELLIGENCE AGENCY
PHOTOGRAPHIC INTELLIGENCE REPORT

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PREFACE

This report is in partial response to requirement C-DI6-83,492, which requested a detailed, comprehensive, chronological analysis of the facilities and activity at Launch Complex A, Sary-Shagan Missile Test Center, USSR, including the "modified Tallinn-type" sites currently identified as "Probable Long Range SAM Launch Complex 2", and referred to as Launch Group 4 in this report.

In view of the scope of this project it was determined that a separate report on the possibly deployed probable long range SAM launch sites could be published in time to meet the most pressing current intelligence requirements. Comparative reference is made to Sary-Shagan Probable Long Range SAM Launch Complex 1, however this report deals primarily with Launch Group 4, located at Launch Complex A.

Detailed photo analysis of the remainder of Launch

Complex A continues and will be included in a forthcoming report.

Though cut-off date for material to be included in this project was originally 1 February 1966, the accomplishment of snow-free photography on [redacted] presented an excellent opportunity for seasonal comparisons which revealed new details regarding the subject areas.

Most measurements presented in this report were accomplished by the NPIC Technical Intelligence Division (TID). Certain critical measurements were accomplished by TID with the CIA/IAD project photo analyst verifying the points, while those measurements requiring stereo interpretation for point identification were accomplished by the CIA/IAD project photo analyst using scale factors derived from NPIC/TID measurements. The line drawing of Launch Complex A (Figure 2) is rectified, with the exception of the enlarged airfield, Launch Group 4 and its associated electronics facilities. The latter features were added from

near vertical [redacted] photography using available control. It is believed these additions are of acceptable accuracy for the purpose of this report. Azimuths shown are considered to be accurate within plus or minus 3 degrees unless otherwise indicated. NPIC/TID generally considers accuracy of measurements as follows: Horizontal distances to 50 feet, [redacted] 10 percent, whichever is greater; distances over 50 feet, plus or minus 5 feet or 2 percent, whichever is greater; height measurements are considered accurate to within plus or minus 5 feet. Measurements made by the CIA/IAD project photo analyst have an estimated accuracy factor which is similar to that of the NPIC/TID measurements used for scale factors.

Dates are frequently cited in this report without reference to the mission numbers. The mission number and other photographic data may be obtained from the reference at the end of the report.

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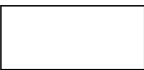
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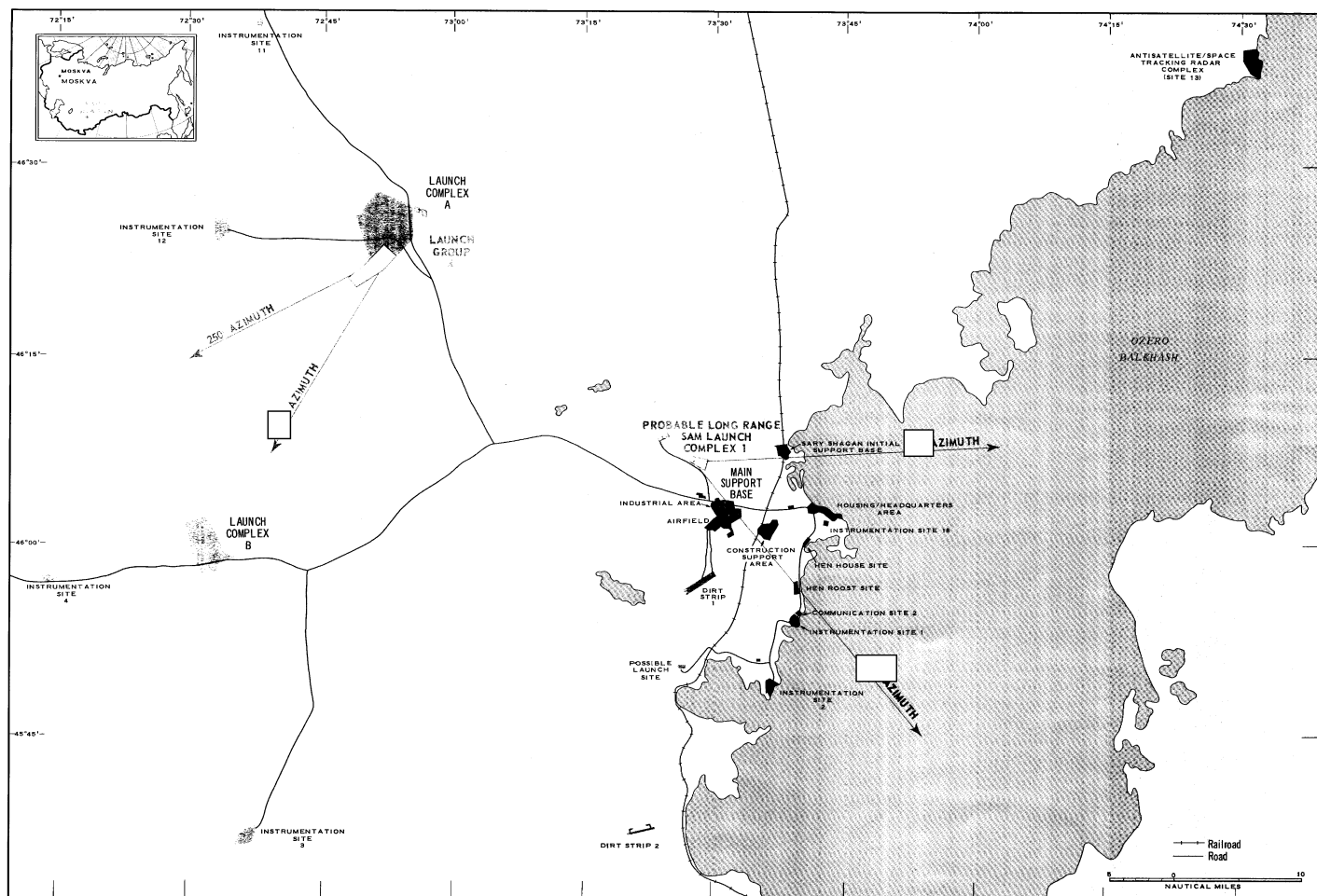


FIGURE 1. LOCATION OF POSSIBLY DEPLOYED, PROBABLE LONG RANGE SAM LAUNCH SITES AT SARY-SHAGAN MISSILE TEST CENTER, USSR, AS OF

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POSSIBLY DEPLOYED PROBABLE LONG RANGE SAM LAUNCH SITES AT SSMTc, USSR

INTRODUCTION

The rapid construction of five probable long range SAM launch sites at Sary-Shagan in 1965 was preceded by considerable developmental and test activity on this system during the preceding four years at Launch Complex A, Launch Sites 3 and 4. The possible deployment at Sary-Shagan followed by at least one year the modification activity at the Leningrad Northwest Complex, and the initial deployment activity at Tallinn and Cherepovets, and by approximately six months the initiation of construction at the Liepaja launch complex. Three of the Sary-Shagan launch sites were constructed near the main support base and two at Launch Complex A. The former came to be known as Sary-Shagan Probable Long Range SAM Launch Complex 1, and the latter as Sary-Shagan Probable Long Range SAM Launch Complex 2.

This report will continue to refer to the complex near the main support base as Launch Complex 1, however, the two sites at Launch Complex A will be referred to as Launch Group 4, Launch Complex A (See Figure 1).

Though evidence leads to the judgement that these new Sary-Shagan launch facilities are part of a deployed, operational defense system, there is some evidence to the contrary, resulting in the qualification "possible" in the title of this report. The photographic evidence bearing on this subject will be discussed in this photo analysis which will include a presentation of chronological and mensural data, supported by annotated photography and line drawings.

Position designations may consist of a sequence of letters and numbers which identify all major and subordinate designations. As an example, the identification: "Launch Group 4, Electronics Site A, Radar Position 1," would more simply be written: Radar Position 4-A1.

LAUNCH GROUP 4 HISTORY

Launch Group 4 is the 4th distinctive launch group constructed at Launch Complex A. The other three are, Launch Group 1 (Launch Sites 1 and 2), Launch Group 2 (Launch

Sites 5 and 6), and Launch Group 3 (Launch Sites 3 and 4). The launch groups are numbered in accordance with the sequence of their probable completion (See Figures 2 and 3). Launch Group 4, located at 46-23N 072-52E, on the southern and eastern edges of Launch Complex A, consists of two possibly deployed operational launch sites (Sites A and B) a nearby radar site with two unidentified tracking/guidance radars (Electronics Site 4-A) and a BACK NET - SIDE NET air warning site (Electronics Site 4-B) with two adjacent unidentified but associated areas located at 46-26N 072-56E. This possibly deployed system was constructed during the 82 day period between [redacted]

On [redacted] the first evidence of construction on Launch Group 4 was seen approximately 2,700 feet east of the Missile Assembly, Checkout and Storage Area (MACSA). This new activity consisted of very early construction on an access road to Electronics Site 4-B. The complete access road and electronics site were seen on the next mission, [redacted] revealing 4 occupied radar mounds and an occupied central control revetment. The faint indication of back-to-back radars on this [redacted] coverage was later confirmed with larger scale photography; therefore, at the time of first coverage the site was probably occupied by two BACK NET and two SIDE NET radars, though it is not possible to determine the state of readiness of the site. The central control revetment contained two rows of vans or vehicles during [redacted] however there was no sign of the revetted building which appeared in the southeast corner of the site on [redacted] having been added sometime after [redacted]. Also seen on the [redacted] photography, approximately 2,970 feet from Electronics Site 4-B on an azimuth of approximately [redacted] degrees, was a small fenced area measuring [redacted] feet, containing two possible bunkered structures spaced [redacted] apart. Approximately 1,400 feet from the [redacted] fenced area, on an azimuth of approximately 160 degrees, could be seen a similar fenced area, also containing two possible bunkered structures. (See Figures 12 and 13). These two road served, unidentified areas are con-

nected by cable trench to Electronics Site C and to Electronics Site 4-A.

The previously operational SA-2 SAM site (B04-2) had been completely inactivated during the spring of 1965. Two of the launch revetments were removed, with the dirt probably used to construct radar mounds and access roads. The two radar mounds, served by new earthen ramps and access roads, contained possible radars in [redacted] while the central control revetment, one of the missile hold revetments, and two of the abandoned SA-2 launch revetments were occupied by unidentified equipment, materials or vehicles. Also added during the 82 day construction period were two, six position launch sites located about 3,000 feet southwest of Electronics Site 4-A, all enclosed by a double security fence. (See Figures 4 and 5).

When first seen, all launch positions and central control revetments were occupied. Launch Site A, the easternmost site, was similar to the conventional, deployed probable long range SAM launch sites seen at such places as Liepaja, Cherepovets, etc, with each launch position containing a "V" pattern incorporating a launcher at the apex and a dolly type vehicle at the end of each of the "V" arms. White toned material in front of each launcher at launch site A was later confirmed as concrete surfacing in the launch area.

First coverage revealed that Launch Site B appeared incomplete, with no "V" pattern or dollies visible. However, later photography made it possible to determine that this did not indicate incomplete status, but a design purposely excluding rails and dollies. In retrospect, it can be concluded that these sites were essentially complete in [redacted]. Although launchers, dollies, and vans could not be identified with certainty on the 1965 coverage, the presence of prominent objects at each of the launch positions and in the central control revetment, the presence of essentially finished concrete surfacing in the launch positions of Launch Site A, and occupied radar positions at Electronics Sites 4-A and 4-B suggests that Launch Group 4 was near operational status in [redacted].

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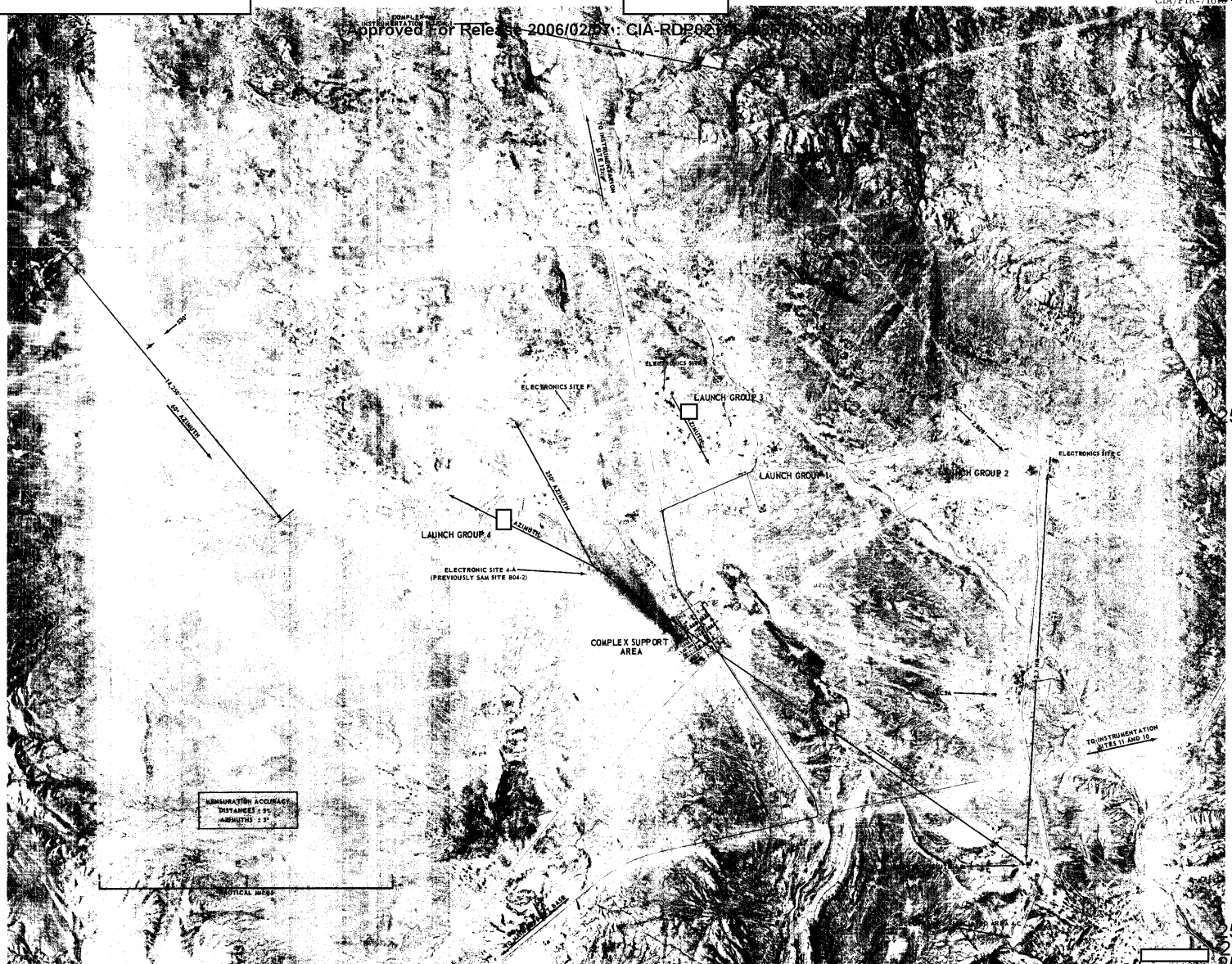


FIGURE 3. LAUNCH COMPLEX A,

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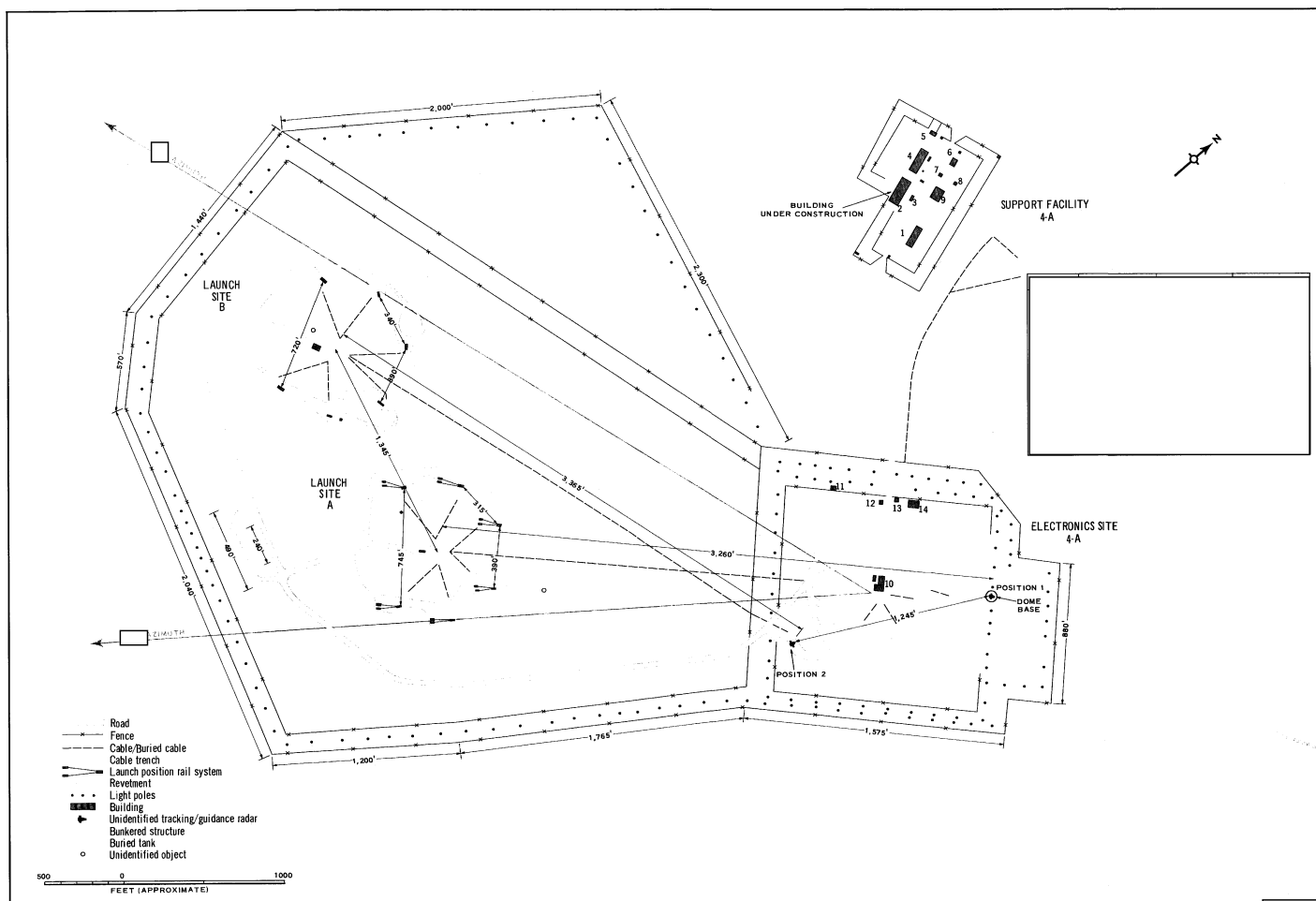


FIGURE 4. LAUNCH AREA, LAUNCH GROUP 4, LAUNCH COMPLEX A, FROM

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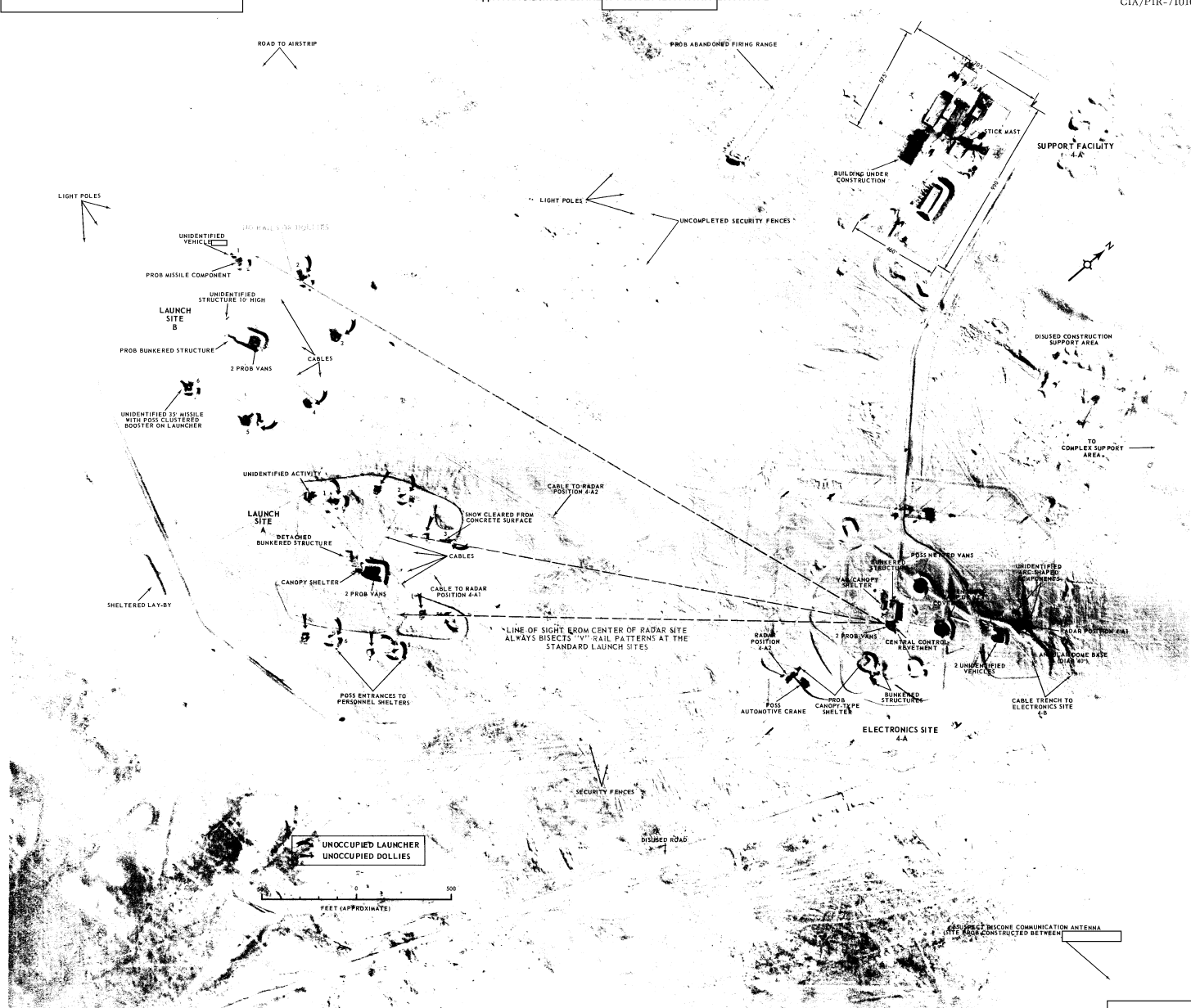
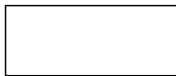


FIGURE 5. LAUNCH AREA, LAUNCH GROUP 4, LAUNCH COMPLEX A.

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AIRFIELD EXTENSION

During the 4 day period between [redacted] work on extending the launch complex airstrip was initiated and had progressed to a point where it was possible to tell it was being extended to the west by an additional 8,750 feet from its original 5,500 foot length.

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Twenty four days later, [redacted] it was evident the airstrip extension project was essentially complete. The landing surface had been enlarged from 5,500 feet to a length of 14,250 feet and its width from 250 feet to 530 feet. Two assembly aprons, each measuring 1,100 by 280 feet, were connected by a 70 foot wide taxi strip which paralleled the airstrip for most of its length on the north. Each assembly apron was connected to the airstrip by two 115 foot wide taxi strips.

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The [redacted] coverage also revealed the construction of a new access road to the airstrip. Following the trace of an old trail for most of its length, the new make-shift access road connects the airstrip operations area with the old SAM site B04-2 access road at a point between the former SAM site and its nearby support facility.

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The [redacted] revealed two shallow bull-dozed excavations adjacent each of the airstrip assembly aprons. These excavations measure approximately 10 to 15 feet wide and vary between 80 and 120 feet in length.

The operations area, containing approximately 164,000 square feet, is enclosed by a low, possible board or stone fence which also divides the area into two roughly equal rectangular sections. The enclosed area contains 5 buildings ranging in size from 15 by 15 feet to 80 by 35 feet, one small bunkered structure, and one possible buried fuel tank. Three shallow excavations adjacent the north side of the operations area, added sometime during 1965, have approximate measurements of 70 by 30 feet, [redacted]

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[redacted] 10 foot revetted area, adjacent the north west corner of the operations area was present in [redacted]

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This revetment is partially enclosed on three sides by a probable wire fence. Six shallow [redacted] square excavations, present in [redacted] are located just west of the operations area.

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LAUNCH GROUP 4 DETAILED ANALYSIS

Launch Site A:

The site road pattern, clearly revealed by snow coverage of [redacted] (Figure 10) is the standard pattern seen at all "post-Tallinn", "non-Leningrad" deployed probable long range SAM launch complexes. The 30 foot wide access road serves the launch positions from the left on both sides of the launch site. The road served 85 by 55 foot central control area is enclosed on three sides by 15 foot high revetments which measure 35 feet wide at the base. A possible entrance on the northeastern side of the "U" shaped revetment suggests that equipment or personnel shelters are buried in the revetment. A 35 by 15 foot canopy shelter is located just outside the revetment opening and a 30 by 25 foot bunkered structure is located west of the revetment entrance. This bunkered structure is suspected as a fuel storage area because of the location of buried tanks at other deployed probable long range SAM launch complexes. However, it is also possible that it is a personnel bunker. The two small dark features seen on the top of the bunker are possibly ventilators. An entrance to the bunker can not be identified.

Cables connecting launch positions with the central control area pass beneath revetments and access roads.

Only four of the six launch positions contain revetments. These launch revetments vary between 40 and 45 feet in base width and rise to a height of 15 feet. The back side of each revetment contains a possible entrance to a personnel shelter buried in the revetment wall.

Each launch position contains two rail mounted [redacted] foot missile dollies and a launcher. The latter is probably attached to a pedestal anchored in concrete and capable of rotation in azimuth. This interpretation is based on the probability that the launchers seen here, similarly configured to those seen at Tallinn, Cherepovets, etc., will be similarly emplaced, as revealed by relatively large scale photo coverage produced of the other launch facilities during various periods of the construction cycle.

Ground photography of possible launchers of the type emplaced at probable long range SAM launch positions has been analyzed and mensuration reveals that the possible launcher (See Figure 8) is approximately [redacted] long when

the blast deflector plate is not elevated. Launchers with elevated blast deflectors at Launch Group 4 [redacted] Figure 9 is a rectified line drawing (1 inch equals 30 feet) which shows a typical launch position with pertinent measurements. The revetment drawn is the one present at Launch Position A5.

Analysis of missile dollies and shadows cast [redacted] photography (Figure 10) leads to an interpretation that dollies possibly are equipped with mechanical devices to facilitate transfer of the missile to and from the launcher.

An unidentified object measuring [redacted] across and 10 feet high is located approximately 260 feet northnortheast of Launch Position A4. It does not appear to be served by cable, road, or trench. Lines drawn from the center of the tracking/guidance radar site always bisect the "V" pattern when drawn through the launch point. (Note Figure 5). This characteristic is noted at all probable long range SAM Launch Complexes.

Launch Site B:

The width of the site road is about half that at Launch Site A, however, the road patterns are similar. (See Figures 4 and 5).

Launch position spacing is generally similar. The primary difference between the two launch sites at Launch Group 4 is the lack of missile dollies and rails at Launch Site B. It appears that the site was designed to exclude facilities for a rapid reload capability, if that is the purpose of the rail and missile dolly system.

The central control revetment is generally similar to that found at Launch Site A, however, a bunkered structure forms an extension of the southwestern end of the revetment. The canopy shelter seen outside the revetment at Launch Site A is not present at Site B.

A detached bunkered structure is not present at Launch Site B, however, in the corresponding location is an unidentified, 10 foot high structure measuring approximately [redacted] feet across. Present at this location on [redacted] See Figure 5), the object was gone on [redacted]

MISCELLANEOUS ASSOCIATED FEATURES

A sheltered lay-by is located Southwest of Launch Site A. It consists of a loop road with a 490 foot lay-by, sheltered by a 240 foot long revetment wall which is 10 feet

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high and 30 feet wide at the base. It is suspected this facility is designed for missile servicing or fueling prior to moving the missile into the launch site.

The secured launch area, excluding the former SAM site area (now Electronics Site 4A), occupies approximately 197 acres of real-estate, while the secured electronics site occupies an additional 59 acres. This does not include the land occupied by the double secured perimeter. A partially completed security fence and line of light poles was constructed north of the launch area, possibly after the summer of 1965. This area contains an additional 28 acres of land. The addition of this triangular, partially secured area would probably permit the inclusion of a third launch site, however, failure to complete the fencing project reflects a change of plan.

The favored orientation of this two site launch group, determined by drawing azimuths from the central control revetment of Electronics Site 4A through outside launch positions is a fan pointing in a southwesterly direction. (See Figures 1 and 4). Had a third site been added, it would have "faced" the launch group further to the west. This in no way implies a limitation on the field of fire, but only a preferred orientation.

ELECTRONIC SITE 4-A

The electronics site consists of two newly constructed road served radar mounds, each occupied by an unidentified tracking/guidance radar. (Refer to Document Reference 1)

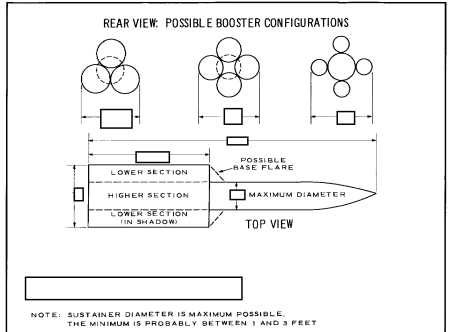


FIGURE 6. PROBABLE MISSILE AT LAUNCH POSITION 6, SITE B, GROUP 4, COMPLEX A ON

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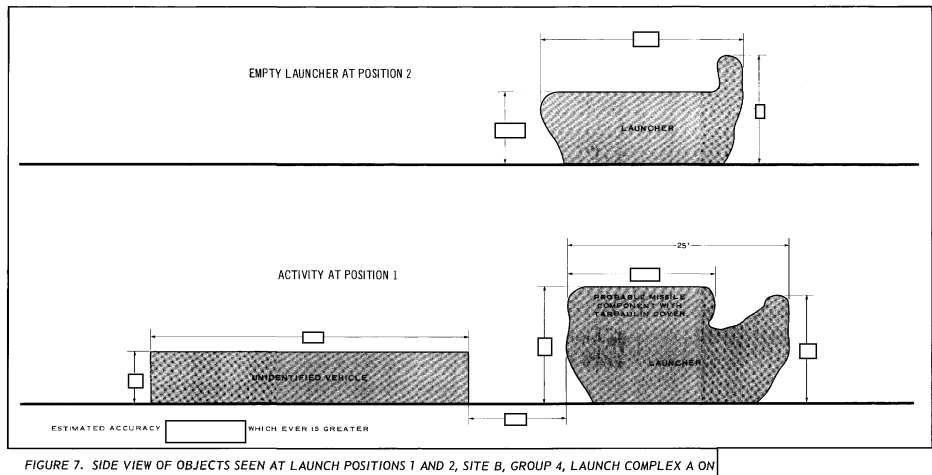


FIGURE 7. SIDE VIEW OF OBJECTS SEEN AT LAUNCH POSITIONS 1 AND 2, SITE B, GROUP 4, LAUNCH COMPLEX A ON

The site straddles the previously operational SA-2 SAM site and makes use of emptied launch and hold revetments for vehicle and equipment storage. The original SAM site security fence was extended to the northeast to enclose the newly constructed radar mound for radar position 4-A1 (See Figure 5).

On photo coverage, the exposed radar at position 4-A2 resembles the tracking/guidance radars associated with Launch Group 3 (Electronics Site B) and radars at various deployed probable long range SAM launch complexes, at the Kapustin Yar/Vladimirovka Missile Test Center and at the Gorkiy/Sormovo Airfield Radar Assembly and Test Area. The radar at position 4-A1 is enclosed in a 40 foot diameter annular dome base, which distorts the radar shadow on the coverage. However, an oblique view on (See Figure 11) reveals sufficient detail to identify it as probably of similar configuration.

The coverage revealed arc shaped, 30 foot long, unidentified components on transporters parked near radar position 4-A1. Note the shadow in Figure 5).

SUPPORT FACILITY 4-A

The former on-site SAM support facility (See Figures 4, 5, and 11) is serving as a support facility for Launch Group 4, with the addition of 9,075 square feet of floor space in a new building started between and

Sport fields, possible fruit trees and vegetable gardens can be seen inside the security fence.

A rectangular area adjacent the northwest corner of the facility was graded and enlarged during On photography it measured approximately 350 by 270 feet.

ELECTRONICS SITE 4-B AND ELECTRONICS ASSOCIATED AREA 4-C

The chronology for contains a detailed description of both facilities. Figure 12 reveals seasonal coverage.

As of Electronics Site 4-B can be seen connected by cable trench to Electronics Site 4-A and to

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COMPARISON OF LAUNCH GROUP 4 AND LAUNCH COMPLEX 1

Sary Shagan Probable Long Range SAM Launch Complex 1 is located near the main support base, not far from the shores of Lake Balkhash, at 46 05N/073 27E. The construction timing of this launch complex is virtually identical with that of Launch Group 4 at Launch Complex A, located approximately 30 nautical miles to the northwest. (See Figures 1 and 14).

As the complex is located near the main support base and the SAM Support Facility, there apparently was no need to construct housing or missile handling and storage facilities. Launch Complex 1 consists of a secured launch area containing three launch sites and an associated electronics site with three radar mounds and a central control revetment. Each of the three radar mounds are occupied by an unidentified tracking/guidance radar which is probably similar in configuration to the radars seen at Electronics Site 4-A, Launch Complex A.

At Launch Complex 1, Launch Sites B and C are essentially similar to Launch Site A at Launch Group A4, in that each launch position has the standard combination of launcher, "V" shaped rail pattern and two missile dollies. As usual, a line from the center of the tracking/guidance radar site bisects the "V" rail pattern when extended through the launch point.

Launch Site A at Launch Complex 1 is similar to Launch Site B at Launch Group A4 in that launch positions contain only launchers, having no rails or missile dollies adjacent the launcher.

All dollies at Launch Sites B and C, Launch Complex 1, have unidentified objects (possibly missile handling mechanism) in a raised position on the launcher side of the dollies.

At Launch Group 4, the distance between Electronics Site 4-A and 4-B is 3.68 nautical miles, whereas the corresponding distance between the tracking/guidance radar site and the air warning site at Launch Complex 1 is approximately 2 nautical miles.

None of the tracking/guidance radars at Launch Com-

plex 1 are enclosed by an annular dome base nor is there evidence of such a device in the area.

The configuration and occupancy of the air warning site at Launch Complex 1 is similar to Electronics Site 4-B at Launch Complex A. Cable connections between the nearby electronics associated area and the air warning site at Launch Complex 1 are also connected to the tracking/guidance radar site in the launch area.

The electronics associated area at Launch Complex 1 closely resembles Electronics Associated Area 4-C at Launch Complex A, however, construction of the former is more advanced. As can be seen in Figure 15, the two possible bunkered structures in each of the unidentified sites are served on one side by a road approximately 20 feet wide. A possible entrance can be seen on the road side of each possible bunkered structure. The access roads to the possible bunkered structures connect at right angles to a 20 foot wide road which runs the length of each of the fenced areas and serves two small hardstands. A small unidentified object is seen on the terminus of each hardstand located opposite the north-western most bunkered structure.

DISCUSSION

REPORT NOMENCLATURE

Conflicting evidence exists regarding the nature of Launch Group 4 and Launch Complex 1. The construction of these probable long range SAM launch facilities at a time when similar complexes were being deployed elsewhere in the Soviet Union, following a period of probably successful development and test activity at Launch Complex A, suggests that Launch Complex 1 and Launch Group 4 at Launch Complex A are operationally deployed or training facilities. The concurrent deactivation of two operational Sary Shagan SA-2 SAM sites (B04-2 and A26-2) tends to support the operational, deployed designation rather than training. The three site pattern at Launch Complex 1 is also similar to a number of other probable long range SAM launch complexes, which are deployed, such as Kalinin (56 36N/35 53E) and Kimry (56 46N/37 19E).

If launch Group 4 is a deployed operational complex it is the only two-site complex in the Soviet Union. This is only one of the facts which causes doubt regarding the design-

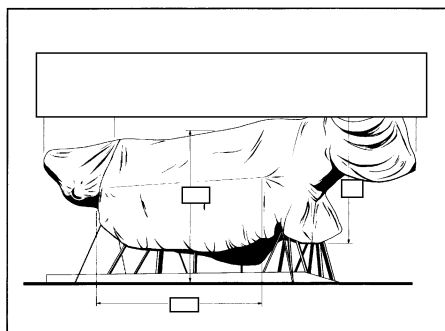
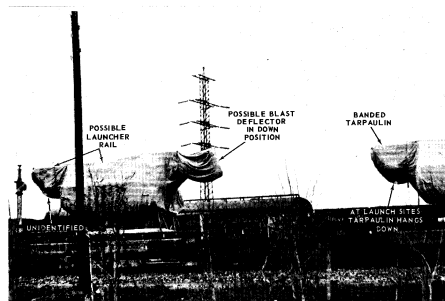


FIGURE 8. TARPULIN COVERED POSSIBLE LAUNCHERS OF THE TYPE BEING EMPLACED AT PROBABLE LONG RANGE SAM LAUNCH POSITIONS. THESE POSSIBLE LAUNCHERS ON FLAT CARS WERE AMONG 9 PHOTOGRAPHED ON [REDACTED] IN A TRAIN GOING SOUTH THROUGH THE ENTUZIASTOV RAILROAD YARDS IN MOSCOW. TWO BOX CARS WITH UNIDENTIFIED TROOPS WERE ALSO PART OF THIS TRAIN.

nation of this launch group as an operationally deployed launch complex.

To this date, the unidentified sites located adjacent the air warning electronics sites at Sary Shagan (See Figures 12 and 15) have not yet appeared completed anywhere in the Soviet Union, and they are further advanced at Sary Shagan Launch Complex 1 than anywhere else.

The presence of an unusual launch site at both Launch Complex 1 and at Launch Group A4 (no rapid reload capability), unlike any seen to date at other probable long range SAM launch complexes, also suggests development and test activity. Further evidence of possible development and test is found at Launch Complex A. The presence of a 40 foot diameter annular dome base around one of the U/I tracking/guidance radars at Electronics Site 4-A is unique.

It would seem that a deployed complex would have standard items. Also suggestive of further development and test is the cable connections between Electronics Associated Area 4-C and the Electronics Site C central control building. This has occurred almost concurrently with the dismantlement of the large back to back radars at Electronics Site C and the new activity at Launch Sites 5 and 6, as reported in recent Mission OAKS.

Though a possibility exists that Launch Complex 1 and particularly Launch Group 4 were constructed for follow-on development and test or training, it seems more likely that Launch Complex 1 is an operational, deployed complex.

It is for the above reasons that the terminology "possibly" deployed, probable long range SAM launch sites is used in this report.

FAVORED ORIENTATION OF LAUNCH SITES

The placement of launch sites with reference to the tracking/guidance radar site in a favored orientation is probable significant. The selective placement of launch position revetments, the variation in revetment size and the failure to revet launch positions 3 and 4 is also probably significant and related. If the purpose of the revetment was protection of the launch position from attack it would seem that positions 3 and 4 would also be revetted and revetments would provide more all-around protection. In some cases only a small straight revetment is seen, specifically, positions B5 at Launch Group 4, and positions 5 and 6 at each of the launch sites at Launch Complex 1. Therefore, it is possible that the launch position revetments are designed to deflect booster blast during launch and to provide some protection against sympathetic explosions in the event of an accidental detonation at one of the launch positions.

If the launch position revetments serve to protect adjacent launch positions against booster blast during launch, it would suggest that the missiles are not generally launched vertically and that the direction of launch possibly is in the general direction of the fan formed by the two azimuths drawn from the center of the tracking/guidance electronics site (See Figures 1, 4 and 14), though probably not limited to that general direction.

MISSILE DOLLIES

As the missile dollies are rail mounted and have never been seen turned in azimuth while rail mounted, it can be hypothesized that the missile arrives on a transporter which moves into a prescribed position for the transfer of the missile to the launcher, which is turned in azimuth to accept the missile. Having accepted the missile, the launcher possibly turns in azimuth until aligned with one of the dolly rails. The missile dolly would then move forward, index to the launcher, transfer the missile and then move back with it into hold position.

The second missile dolly could be loaded in a similar manner, and finally, a third missile could be placed in position on the launcher for a potential site load of 18 missiles.

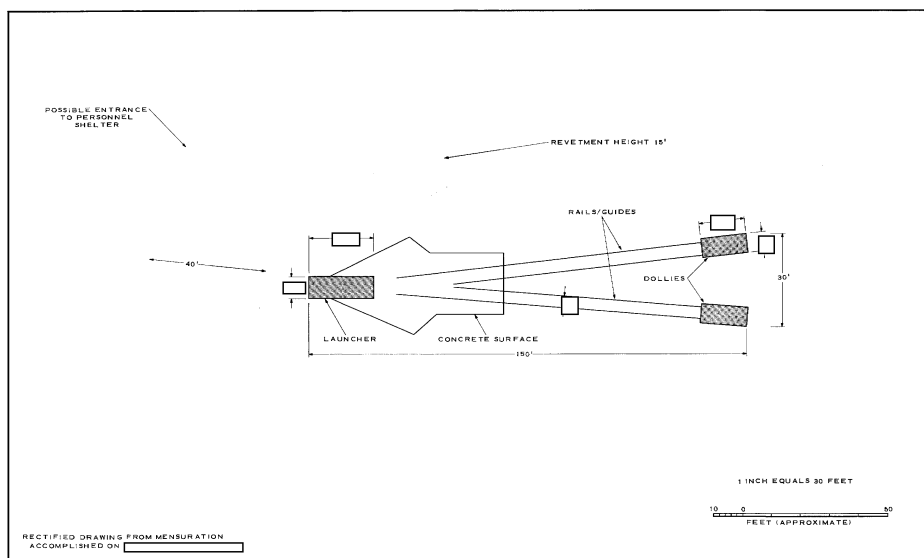


FIGURE 9. RECTIFIED LINE DRAWING OF A TYPICAL PROBABLE LONG RANGE SAM LAUNCH POSITION.

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FIGURE 10. LAUNCH SITE A, GROUP 4, COMPLEX A ON

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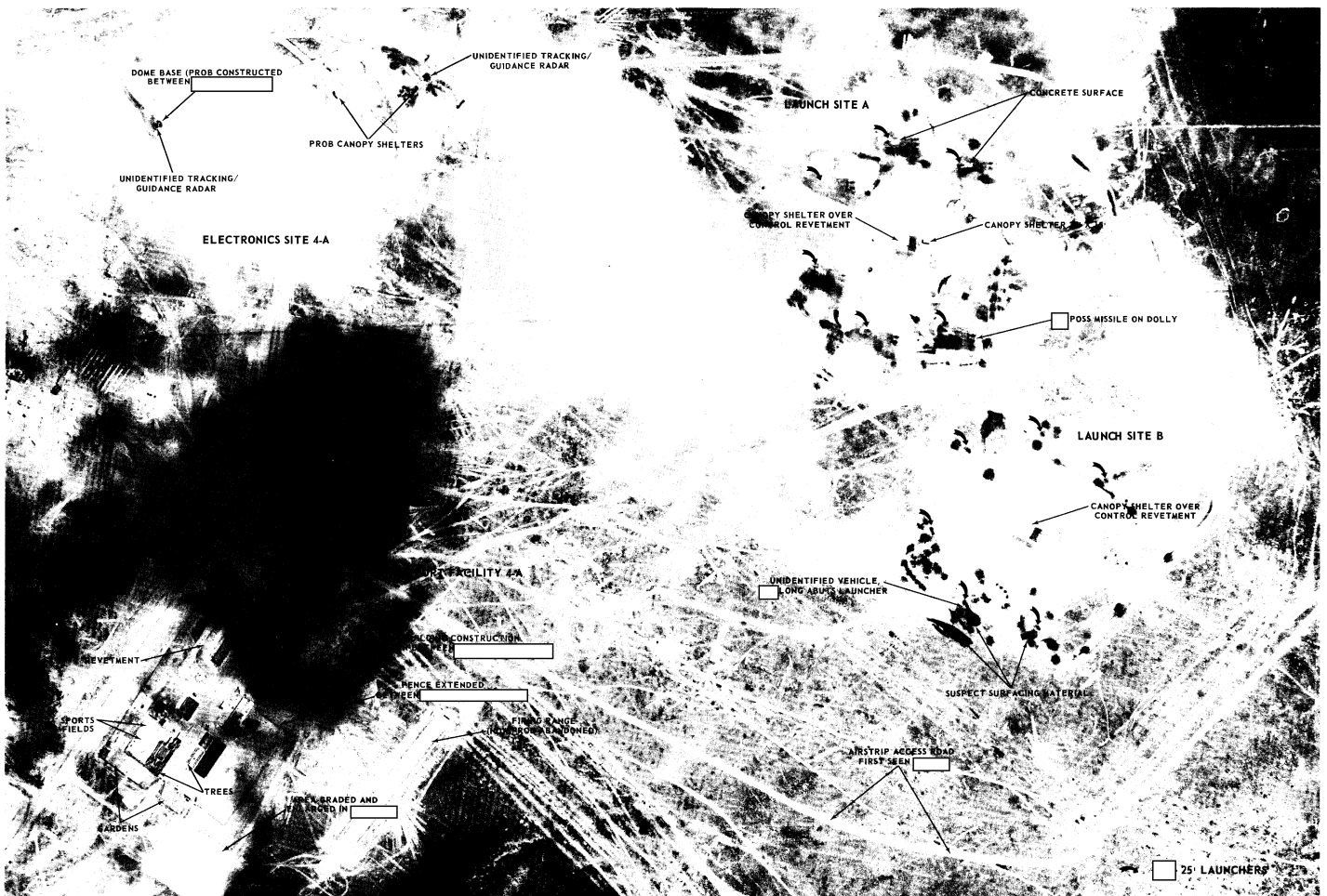


FIGURE 11. LAUNCH AREA, LAUNCH GROUP 4, LAUNCH COMPLEX A ON

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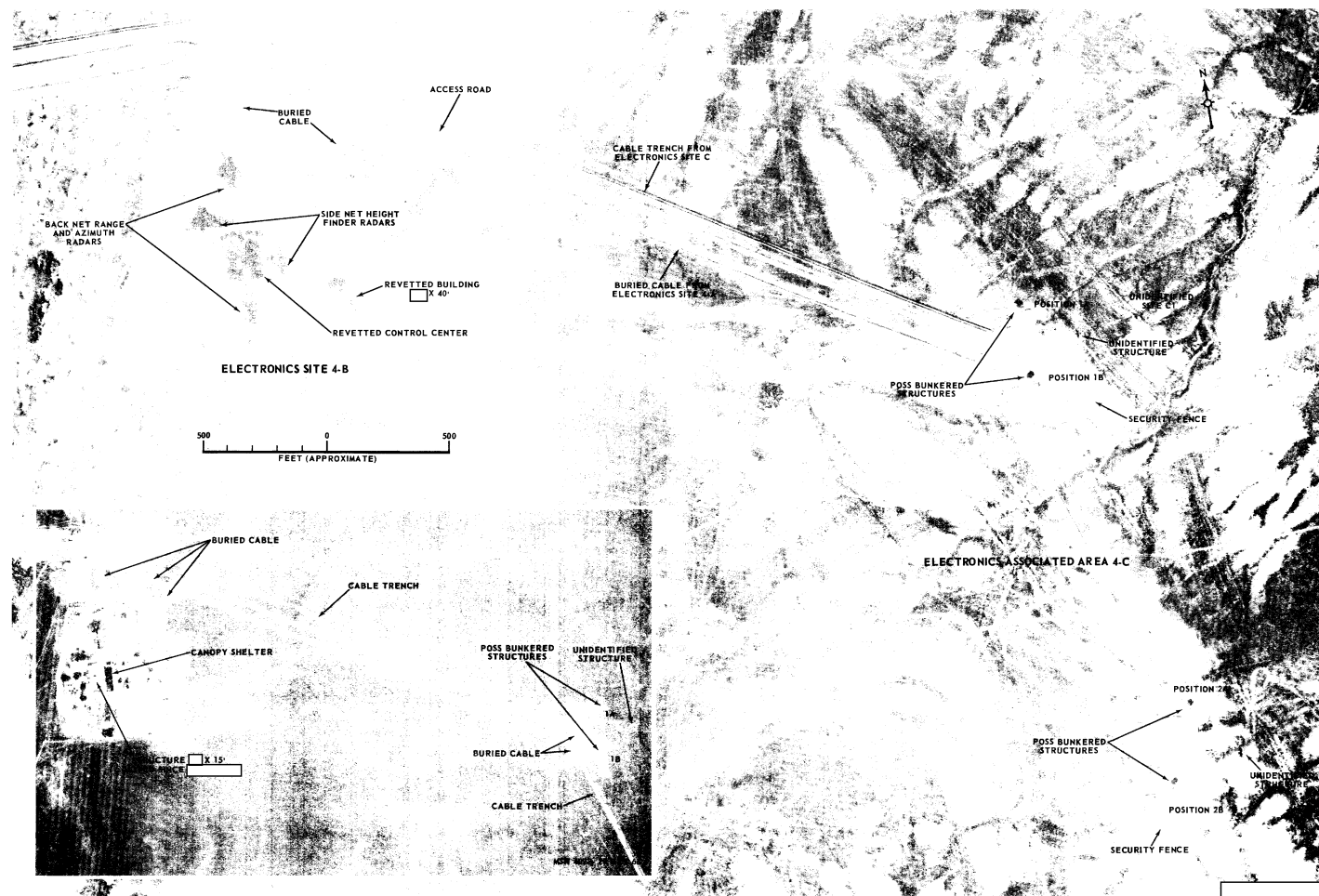
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FIGURE 12. AIR WARNING FACILITIES ASSOCIATED WITH LAUNCH GROUP 4, LAUNCH COMPLEX A.

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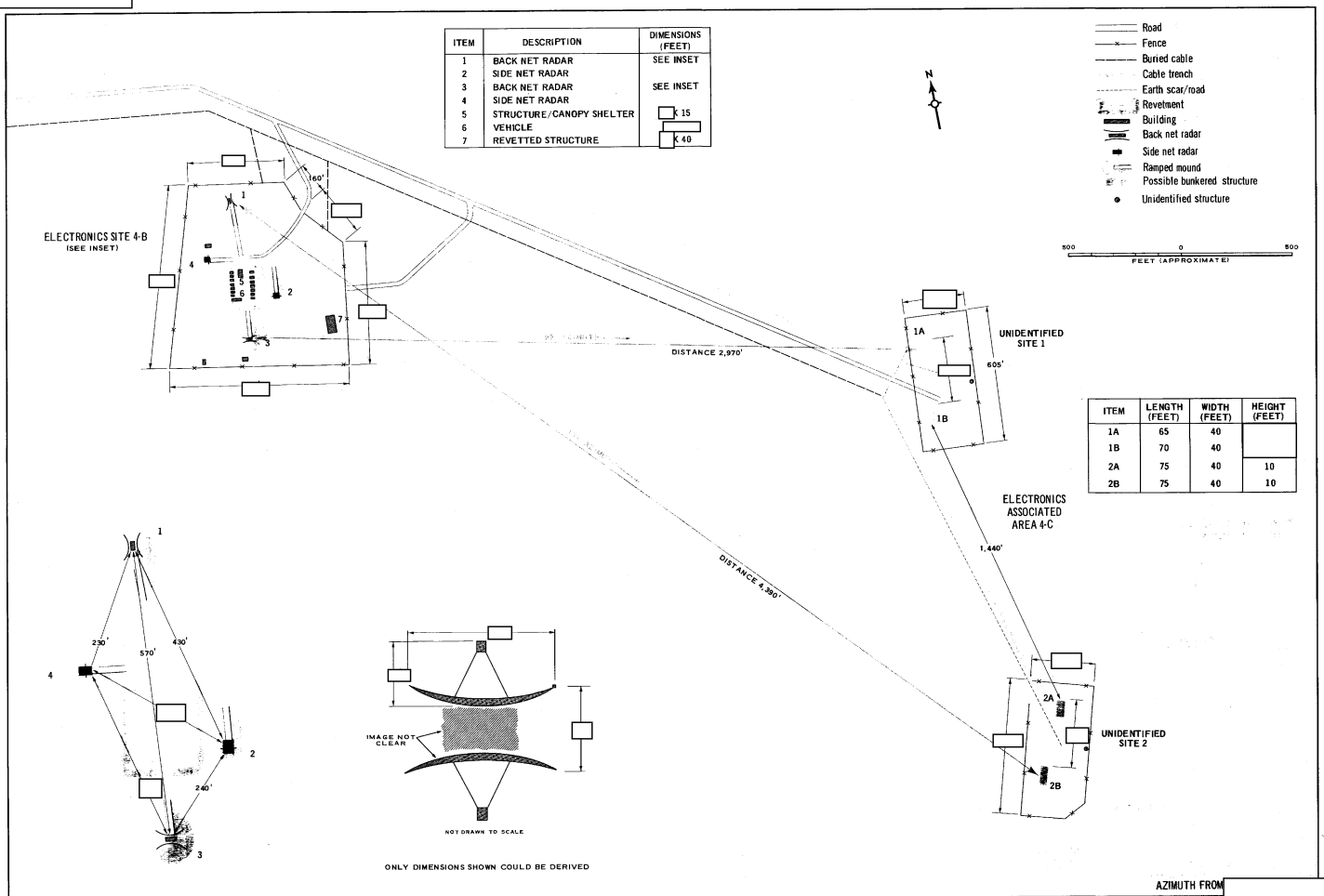


FIGURE 13. AIR WARNING FACILITIES ASSOCIATED WITH LAUNCH GROUP 4, LAUNCH COMPLEX A FROM

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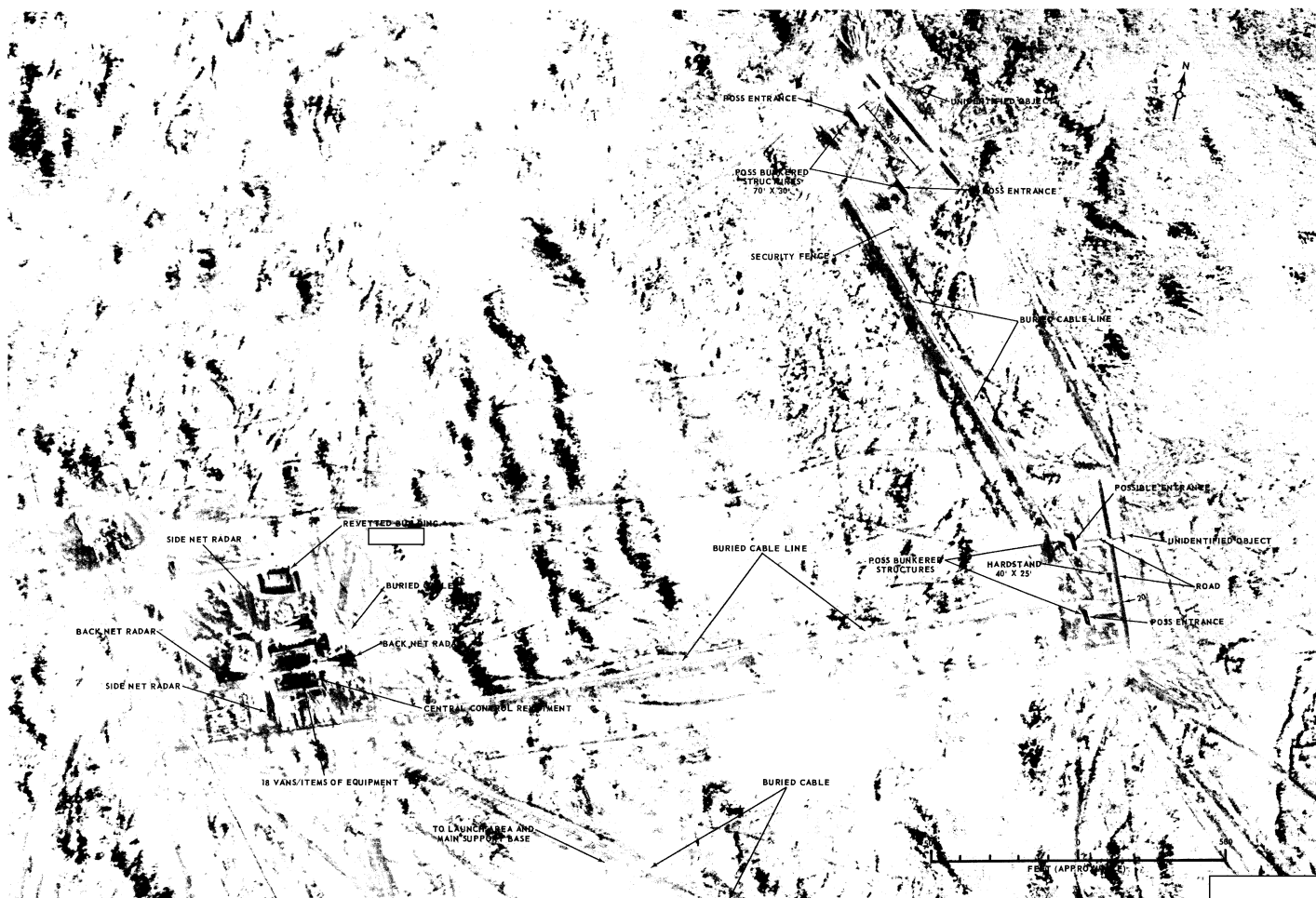


FIGURE 15. AIR WARNING FACILITIES ASSOCIATED WITH SARY-SHAGAN PROBABLE LONG RANGE SAM LAUNCH COMPLEX 1.

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CHRONOLOGY OF LAUNCH GROUP 4, SARY-SHAGAN LAUNCH COMPLEX A

Launch Sites A & B No activity noted.
Electronics Site 4-A No activity noted. SAM Site B04-2 is probably still operational.
Electronics Site 4-B Initial construction on access road is visible. No activity at the radar site location.
Electronics Associated Area 4-C No activity noted.
Support Facility 4-A, The Complex Airstrip No apparent change.

Launch Sites A & B Both launch sites appear complete. Access roads, launch position revetments and central control revetments are visible. Possible vehicles/pieces of equipment are present in the central control revetments. Possible launchers are present at all launch positions. Possible dollies can be seen at each of the launch positions at Launch Site A, with a "V" shaped pattern appearing between the dollies and an area of possible concrete surfacing adjacent each of the launch points. Two vehicles/pieces of equipment are parked, one on each side of the launcher at position A-6. Piles of dark possible road surfacing material can be seen in the launch area. The revetted lay-by south of Launch Site A is present. A double security fence can be seen enclosing the Launch area. Cable runs lead from the launch site central control revetments to Electronics Site 4-A.

Electronics Site 4-A Each of the two newly constructed radar mounds is occupied by a probable radar. A group of vans/vehicles are parked adjacent radar position 4-A2. Two of the former SA-2 launch revetments, a central revetment and the former missile hold revetment adjacent radar position 4-A1 are occupied by vehicles, vans or materials. A cable trench can be seen leading eastward from the electronics site, skirting the southern and eastern side of the Complex A support area before being hidden by cloud.

Electronics Site 4-B The site appears complete with two back to back radars and two probable height finders in position on mounds. The central control revetment contains two rows of vehicles (approximately 20). Two cable scars and an access road skirt the northern side of the radar site and lead to Electronics Associated Area 4-C. A road from Electronics Site 4-B joins the access road and two cable scars tie into the southern most cable scar leading from Electronics Associated Area 4-C. A new cable scar leads from the road intersection west of Electronics Site 4-B as far as the area just north of the northeastern outgrowth of Electronics Site C.

Electronics Associated Area 4-C Each fenced area contains two mounds or bunkered structures. Cable trenches and an access road lead into both areas.
Support Facility 4-A, The Complex Airstrip No apparent change.

Launch Sites A & B No apparent change in site configuration, however, the two vehicles/pieces of equipment parked near the launcher at position A-6 are no longer present.

Electronics Site 4-A No apparent change with the exception that the cable trench between Electronics Sites 4-A and 4-B is now approximately 50 percent complete.

Electronics Site 4-B, Electronics Associated Area 4-C, Support Facility 4-A, The Complex Airstrip An 8,750 foot extension of the southwest end of the runway is underway.

Launch Sites A & B Two vehicles/pieces of equipment can be seen in each of the central control revetments. Though the exact number could not be discerned on previous missions there appeared to be more than two.

Electronics Site 4-A More than half of the vehicles/pieces of equipment parked alongside radar pad 4-A2 during the period [] are no longer present. There is no detectable change to the radars.

Electronics Site 4-B The cable trench between Electronics Site 4-A and 4-B is now seen extended the entire distance. It skirts Electronics Site 4-B on the north and extends into Unidentified Area 4-C1.

Electronics Associated Area 4-C No apparent change.
Support Facility 4-A A large possible van seen south of the revetted building during the [] pass is not present.

The Complex Airstrip The airstrip extension project is essentially complete.

The runway is now 14,350 feet long by 530 feet wide. No apparent change in the operations area. A new access road skirts the west and north side of the Launch Group 4 launch area and connects the airstrip operations area with the old SAM Site B04-2 access road. The fence line extension for a possible third launch site was probably not present at this time.

Launch Sites A & B, Electronics Site 4-A, Electronics Site 4-B, Electronics Associated Area 4-C, Support Facility 4-A, The Complex Airstrip No changes detected through heavy haze and heavy to scattered clouds for all items.

Launch Sites A & B No apparent changes seen through scattered clouds.
Electronics Site 4-A No apparent change seen in the deep cloud shadow.
Electronics Site 4-B Though in deep cloud shadow, signs of activity are seen in the southeastern corner, a location later identified as the site of an 85 by 40 foot revetted building.

Electronics Associated Area 4-C, Support Facility 4-A, The Complex Airstrip No apparent change seen through scattered clouds and in cloud shadow.

Launch Sites A & B, Electronics Site 4-A, Electronics Site 4-B, Electronics Associated Area 4-C No apparent change.

Support Facility 4-A A possible vehicle seen on the south edge of the facility on 18 Aug 65 is now absent. No other changes.
The Complex Airstrip No apparent change through scattered clouds.

Launch Sites A & B Possible surfacing material has darkened areas at both launch sites. This activity is generally confined to areas on and near access roads and to areas in the vicinity of launch positions. The activity gives the sites a mottled appearance and makes detection of vehicles and equipment difficult.

Electronics Site 4-A New activity is seen near each radar pad. The annular dome base seen clearly on late [] cover, at radar position 4-A1, is seen for the first time on this mission. It was probably not present on previous missions.

Electronics Site 4-B A new revetment is seen in the southeastern corner of the site. It is not possible to determine the construction stage of the enclosed building. The area contains a number of U/I objects or ground stains not previously present.

Electronics Associated Area 4-C, Support Facility 4-A, The Complex Airstrip No apparent change.

Launch Sites A & B, Electronics Site 4-A, Electronics Site 4-B, Electronics Associated Area 4-C, Support Facility 4-A, The Complex Airstrip Heavy cloud cover.

The Complex Airstrip Unidentified activity can be seen at both assembly aprons, possibly at the eastern end of the runway, and possibly in the vicinity of the operations area. Heavy haze and scattered clouds hinder interpretation.

Launch Sites A & B Snow covers the area, however the following is seen:
Launch Site A: Each launch position contains a launcher and two missile dollies. Probable tarpaulin is draped over missile dollies at positions 5, 6, and probably 3. Activity since the last snowfall has taken place in the immediate vicinity of missile dollies at launch positions 1, 2 and 4, and adjacent the launcher at positions 1, 3 and 4. Two vehicles, one of which is a probable van, are parked in the central control revetment. Cables are seen leading from the central control revetment to all launch positions and to Electronics Site 4-A. Rails are seen between each missile dolly and the launcher at each launch position.
Launch Site B: A launcher is present at each launch position, however, missile dollies and rails are not present. Activity since the last snowfall is evident at each launch position. At launch position 1, a [] U/I vehicle is parked [] in front of the launcher. A probable missile component, possibly tarpaulin covered, is seen on the launcher at launch position 1 (See Figures 5 and 7). At launch position 6, a [] probable missile having [] probable booster section, is mounted on the launcher in a horizontal position. The nose of the probable missile is pointed down the access road which leads into the position. (See Figure 6). Two probable vans are parked in

the central control revetment, which is connected by cable to each of the launch positions and to Electronics Site 4-A. A partially completed security fence north of the launch area encloses an additional 135,000 square yards, suggesting an intention to install a third launch site. This fence was probably not present during the summer of 1965, at the time the new airstrip access road was constructed.

Electronics Site 4-A Two radars, probably similar in configuration to those seen at Electronics Site B, are in position. An annular dome base surrounds the radar at position 4-A1. Two transporters, each approximately [] are parked adjacent radar position 4-A1. Each of the transporters carries a 30 foot long, are shaped, unidentified equipment. It is not possible to tell if the radar inside the annular dome base is fully assembled. The old missile hold revetment adjacent radar position 4-A1 contains two vehicles/vans. The northern most former SA-2 launch revetment contains three probable net covered vans and additional unidentified material/equipment. Clockwise, the next former SA-2 revetted launch position contains unidentified but possibly tarpaulin or net covered objects. The southernmost former SA-2 revetted launch position contains a probable canopy type shelter. Two bunkered structures flank the access road to the latter revetment. The center control revetment contains two probable vans while a van or canopy type shelter is located on the west side of the central bunkered structure. An unidentified vehicle and a possible automotive crane are parked adjacent the north side of radar pad 4-A2. A probable canopy type shelter abuts the northwest corner of radar pad 4-A2. A cable can be seen connecting the radar to the probable canopy type shelter which in turn is connected to launch site B control center. A small U/I vehicle is parked on the radar pad access road west of the radar. The cable from launch site A is seen entering the electronics site but can not be followed beyond the central revetment. The cable trench from Electronics Site 4-B is seen skirting the south side of radar pad 4-A1 but is lost shortly thereafter. Snow covered former SA-2 control cable conduits/trenches are clearly seen connecting the various positions and may be used for cables in the new role.

Electronics Site 4-B The site contains two BACK NET and two SIDE NET radars mounted on earthen mounds. The central drive-through revetment contains 17 vans/vehicles and a [] by 15 foot structure or canopy shelter. The southeast corner of the site contains an [] 40 foot building which is revetted on two sides. The building appears externally complete. Approximately 8 small probable vehicles are parked near the east side of the building. A small van is parked on the north side of the western most SIDE NET radar mound and 4 possible vehicles are parked on the south side of the southern most BACK NET radar mound.

Electronics Associated Area 4-C No change is noted, however the better quality photography reveals details not previously seen. The cable trench to Electronics Site C is seen approaching the security fence on the north side of the Electronics Site C control building, however, it has not yet been extended into the secured area. The buried cables from Electronics Site 4-A and Electronics Site C enter unidentified site 1, at Electronics Associated Area 4-C, where they are joined. Another cable trench then connects this system to unidentified site 2. (See Figures 12 and 13)

Support Facility 4-A Adjacent the south side of the [] by 55 foot building, a similarly dimensioned building is in early stages of construction.
The Complex Airstrip No significant change noted.

Launch Sites A & B Approximately two thirds of the central control revetment at each launch site is covered with a canopy type shelter. A possible missile approximately [] is mounted on one of the missile dollies at launch position A1. A probable transporter approximately 35 feet long is parked in front of the launcher at position B2.

Electronics Site 4-A The vehicles and equipment seen parked adjacent each of the radar positions on [] are no longer present.
Electronics Site 4-B The [] by 15 foot structure or canopy shelter has been moved further inside the drive-through revetment, half of which is covered by a canopy. No vehicles are visible, however, the canopy could probably cover half of those which were parked inside the revetment on []

Electronics Associated Area 4-C No change noted, however, the cable trench to Electronics Site C is now seen extended inside the secured area and leading to the control building of Electronics Site C.

Support Facility 4-A Roof construction is seen on the new 165 by 55 foot building. Landscaping, and sports fields are located inside the secured area. Probably vegetable gardens have been planted between the security fences on the north side of the area. (See Figure 11)

The Complex Airstrip No apparent change.

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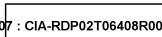
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
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REQUIREMENT

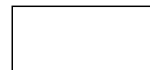
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